

DOCUMENT RESUME

ED 453 728

HE 034 052

AUTHOR Moorhouse, Dian R.
TITLE Effect of Instructional Delivery Method on Student Achievement in a Master's of Business Administration Course at the Wayne Huizenga School of Business and Entrepreneurship.
INSTITUTION Nova Southeastern Univ., Fort Lauderdale, FL.
REPORT NO RP-01-02
PUB DATE 2001-01-00
NOTE 20p.
PUB TYPE Reports - Research (143)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *Computer Assisted Instruction; *Distance Education; *Graduate Students; Graduate Study; Higher Education; *Student Attitudes; *Teaching Methods
IDENTIFIERS *Nova Southeastern University FL

ABSTRACT

The purpose of this study was to determine the effect of instructional delivery method on student achievement by examining the application of two different delivery methods to separate groups of students enrolled in different sections of the same Master's in Business Administration course at Nova Southeastern University, Florida. For each section, instructor, text, assignments, and examination were identical. One group of 20 students received traditional, face-to-face instruction in a classroom setting, with classes delivered in a weekend format. The other group of 15 students received electronically mediated instruction, with instruction delivered online and discussion transpiring between student and instructor via e-mail and online discussion group. Student performance was operationally defined as the score on a midterm examination. Findings reveal that there was no statistically significant difference in the mean test scores for the two groups. (Contains 18 references.) (Author/SLD)

**EFFECT OF INSTRUCTIONAL DELIVERY METHOD ON STUDENT
ACHIEVEMENT IN A MASTER'S OF BUSINESS ADMINISTRATION
COURSE AT THE WAYNE HUIZENGA SCHOOL OF BUSINESS
AND ENTREPRENEURSHIP**

Dian R. Moorhouse, M.B.A.

Director, Planning and Accreditation

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS
BEEN GRANTED BY

D. Moorhouse

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as
received from the person or organization
originating it.

☐ Minor changes have been made to
improve reproduction quality.

• Points of view or opinions stated in this
document do not necessarily represent
official OERI position or policy.

Nova Southeastern University
Research and Planning
Report 01-02

January 2001

**EFFECT OF INSTRUCTIONAL DELIVERY METHOD ON STUDENT
ACHIEVEMENT IN A MASTER'S OF BUSINESS ADMINISTRATION
COURSE AT THE WAYNE HUIZENGA SCHOOL OF BUSINESS
AND ENTREPRENEURSHIP**

Dian R. Moorhouse
Report 01-02

Director, Planning and Accreditation
January 2001

EXECUTIVE SUMMARY

The purpose of the study was to determine the effect of instructional delivery method on student achievement by examining the application of two different delivery methods to separate groups of students enrolled in different sections of the same MBA course at Nova Southeastern University. For each section, the instructor, text, assignments, and examination were identical. One group of 20 students received traditional, face-to-face instruction in a classroom setting, with classes delivered in a weekend format. The other group of 15 students received electronically-mediated instruction, with instruction delivered online and discussion transpiring between student and instructor via e-mail and online discussion group. Student performance was operationally defined as the score on a mid-term examination. Findings revealed that there was no statistically significant difference ($\alpha = .05$) in the mean test scores for the two groups.

TABLE OF CONTENTS

	Page
Executive Summary	2
Introduction	5
Purpose of the Study	6
Research Question	6
Research Hypothesis	6
Review of the Literature	6
Definition of Terms	11
Methodology	11
Data Collection	11
Population	11
Sample	11
Variables	12
Instrument	12
Scoring and Data Presentation	12
Assessment of Reliability for the Instrument	12
Assessment of Validity for the Instrument	13
Data Analysis	13
Null Hypothesis	13
Alternative Hypothesis	13
Significance Level	14
Region of Rejection	14
Statistical Test	14

	4
Assumptions	14
Limitations	14
Results	15
Discussion	16
Conclusions	16
Implications	16
Recommendations	17
References	18

INTRODUCTION

The Huizenga Graduate School of Business and Entrepreneurship (SBE) of Nova Southeastern University (NSU) has been offering a Master's Program in Business Administration (MBA) through a distance delivery mode since the 1970's. The single mode of distance delivery was face-to-face instructor/student interaction in a classroom setting on alternating weekends until July 1998, when SBE also established a Virtual MBA program, through which courses are offered in an electronically-mediated education mode.

The accreditation criteria of the Southern Association of Colleges and Schools, the regional accreditation body through which the university is accredited, require institutions offering distance education programs to ensure that these programs demonstrate educational outcomes that are comparable to those offered on-campus. This presents a challenge, because in the majority of instances, significant differences exist in the characteristics of online and on-campus versions of a given course, i.e., different instructors, syllabus, texts, assignments, and/or examinations, etc.

The Office of University Research and Planning has undertaken several previous studies designed to compare the performance of students in courses conducted in both Internet- and campus-based instructional formats. In May 2000, the university examined for the first time comparative student performance in Internet-based courses and campus-based courses and found that there were substantial differences in student outcomes for courses offered in both modalities (Fredda, 2000d). Two significant findings were that undergraduate students in some campus-based sections out-performed those in Internet-based sections, but that graduate students in Internet-based sections out-performed those in campus-based sections. Three subsequent research reports were pursued to study these findings more closely for specific academic units, the Farquhar Center for Undergraduate Studies, the Fischler Graduate School of Education and Human Services, and the Wayne Huizenga School of Business and Entrepreneurship, by identifying specific courses that may have contributed to the observed differences (Fredda, 2000a, 2000b, 2000c).

The above referenced studies, while examining student performance under different instructional modalities, were not designed to identify differences in instructors, syllabi, texts, assignments, and examinations between Internet-based and campus-based sections of the same course, nor to control for the possible effects of such differences on student performance. The absence of such control imposes limitations on inferences to be drawn from observable differences in student performance between online and more traditionally-delivered course offerings.

During the January-March 2000 term, SBE offered a course, GMP 5015 - The Legal, Ethical, and Social Values of Business, through traditional, face-to-face instruction at an off-campus location on alternating weekends, and through electronically-mediated instruction. The course sections were taught by a single instructor, who used the same syllabus, the same text, the same written assignments, and the same examinations. Accordingly, this provided an opportunity to build upon the prior studies by exercising some control over the influence of such variables on subsequent student performance.

PURPOSE OF THE STUDY

The purpose of this study was to determine the effect of instructional delivery method on student achievement by examining the application of each delivery method to a separate group of students each enrolled in a different section of the same MBA course. Both sections were taught by the same instructor, using the same syllabus, text, assignments, and examinations. Subsequent student achievement was measured by performance on a common mid-term examination. One group of students received traditional, face-to-face instruction in a classroom setting, with classes delivered in a weekend format. The other group received electronically-mediated instruction, with instruction delivered online and discussion transpiring between student and instructor via e-mail and online discussion group. The intent of the study was to expand the body of knowledge regarding the effect of instructional delivery method on student performance by attempting to control for the effects that different instructors, syllabi, texts, assignments, and examinations might otherwise have on student performance.

RESEARCH QUESTION

The research question for this study was as follows: What is the effect of instructional delivery method on the performance of students enrolled in two different sections of a Master's of Business Administration course, GMP 5015 - The Legal, Ethical, and Social Values of Business, when each section is taught by the same instructor using the same syllabus, text, assignments, and examinations, but a different instructional delivery modality, and student performance is measured by scores on a common mid-term examination?

RESEARCH HYPOTHESIS

The research hypothesis for this study was as follows: There will be no significant difference in student performance, as measured by scores on a common mid-term examination, between two groups of students enrolled in different sections of MBA course GMP 5015 - The Legal, Ethical, and Social Values of Business, each of which is taught by the same instructor using a different instructional delivery method, but the same syllabus, text, assignments, and examination.

REVIEW OF THE LITERATURE

The Institutional Effectiveness Movement

During the early 1980s, there was a proliferation of studies assessing the quality of education in the nation's institutions of higher education. This followed the publication of several major critical reports regarding the deplorable conditions of some educational systems serving elementary and secondary students (Gaither, Nedwick, & Neal, 1995; Debrecony, 1999; Derlin, Solis, Aragon-Campos & Montoya, 1996; Pausch & Popp, 1997). A call for increased scrutiny regarding the quality of higher education was issued from multiple constituencies. As Debrecony explains: "... the stakeholders in America's colleges and universities - students, parents, alumni, employers, government officials, and perhaps most importantly, tax-paying citizens - became concerned about what was happening at their institutions." (1999, p.1). Debrecony cites the economic recession of the period and the attendant reduction in resources, in

addition to the concerns expressed in several key reports and in the press, as factors contributing to the increased scrutiny.

The initial focus of concern predominantly was on undergraduate education, but subsequently extended to encompass the entire spectrum of educational degree offerings beyond the secondary level (Debrecony, 1999). Gaither et al. (1995) note that there was a shift in funding allocation mechanisms from funding by formula to funding performance outcomes. This shift in how funding was channeled to support higher education served to underpin and drive efforts within the higher education community and among policy makers to develop some system of performance indicators as measures of effectiveness. Increased interest was generated in how to define quality - or effectiveness - in higher education and how it might be measured. Gradually, the quality of higher education began to be perceived less as a function of factors such as the number of volumes in the library, and more a function of the overall effectiveness of individual institutions in meeting the visions and mandates they established for themselves in their missions.

Measuring Institutional Effectiveness

As a result of this shift in the interests of higher education constituents, there was a fundamental change in the nature and direction of institutional accountability measures. Marwick, while noting that the early impetus for change was made at the federal governmental level, in response to growing concern about the quality of higher education, cites two key national reports, *Involvement in Learning*, produced in 1984 by the National Institute of Education, and *Integrity in the College Curriculum*, which was produced the following year by the Association of American Colleges. Both reports proposed assessment as an effective mechanism for responding to concerns. Assessment of higher education began during this period to be embraced at the state governmental level as well. Various educational foundations and organizations also began to follow suit in expressing concern and lobbying for responsiveness.

. . . Perhaps the most far-reaching efforts to mandate academic outcomes assessment at the post-secondary level have been made by the accreditation agencies Since the 1980s, the regional accrediting bodies, led by the Southern Association, have been pushing self-assessment as a means of accountability which does not impose outside standards. (Marwick, p. 6)

Derlin et al. (1996) describe the shift during this period away from using traditional measures to evaluate institutions. He notes that the regional accreditation associations, prior to the period 1985-1989, assessed the accomplishment of institutional mission based on "input" factors, such as the adequacy of classroom space and facilities, the number of library volumes, the credentials of faculty, and the fiscal stability of the institution. Debrecony (1999) provides a similar analysis, citing such additional formerly employed input measures as faculty-student ratios, the number of doctorates granted, entrance scores on standardized examinations, and average high school rank. Debrecony notes the implications of this focus, as follows: "Nothing was done to try to assess or evaluate the outputs of the institution's programs. The presumption was that if the quality and quantity of an institution's inputs were assured, then the quality of its outputs were assured indirectly" (p. 1).

Derlin et al. (1996) note that the drive for accountability at every level transitioned accreditation toward a model of institutional effectiveness. He points out further that whether the process was called effectiveness or outcomes assessment, the focus was on the academic achievement of students. The result is that assessment of quality and the concept of quality indicators both now are rather deeply entrenched within higher education. As Derlin indicates:

Indeed, they are becoming an integral part of an emerging international method on how to manage higher education, with indicators serving as signals or guides for making national or international comparisons in educational quality, effectiveness, and efficiency. Further, the main advantage of such performance indicator systems is their usefulness as points of reference for comparing quality or performance against peers over time, or achievement against a desired objective. (p. 1)

Eventually, the concept of accountability was woven into the requirements of all the regional accrediting bodies. Several researchers take note of the pervasive impact of the new mandates on institutions of higher education (Derlin et al., 1996; Marwick, 1998; Pausch and Popp, 1997; Vinchow, 1997). The accrediting bodies called for accountability through assessment of multiple output measures. Such measures (e.g., graduation rates, graduate school placement rates, scores on achievement tests, licensure examination passage rates, retention rates, and employment placement rates), though not in all instances specifically prescribed, are suggested or made implicit in the language of the various standards and criteria.

Distance Education and Institutional Effectiveness

Changes in how education is delivered to students, in particular, the current and emerging array of distance education modalities, have compounded the questions pertaining to institutional effectiveness. Significant attention has been directed at the expanding array of distance education offerings and delivery mechanisms among institutions of higher education, and to questions of equivalency between such offerings and courses offered through traditional, face-to-face means. Questions of equivalency have focused not only on the resources provided to students regardless of the instructional delivery mechanism, but also on the outcomes of student learning (Cyrs, 1997; McCollum, 1997; National Center for Education Statistics, 1999; Radhakrishnan & Bailey, 1997; and Simonson, 1997).

Data from the National Center for Education Statistics (NCES) reveal that in the period between fall 1995 and the 1997-98 academic year, there was a one-third increase in the percentage of distance education courses offered by institutions of higher education, from 33% to 44% (1999). During this same period, according to the NCES, the actual number of course offerings, as well as the number of student enrollments in distance education nearly doubled. Perhaps most significantly, the percentage of colleges and universities using asynchronous Internet-based technology in the delivery of distance education nearly tripled between 1995 and 1997-98. Commenting on these statistics, the authors of the NCES study note: "It is a dramatic time for post-secondary educational institutions facing the opportunities and challenges brought by technological innovation" (1999, p. vii).

A significant volume of literature related to higher education focuses on this expanding and integral role of technology in teaching and learning. In particular, considerable attention has been directed at the role of technology in both driving the transformation of higher education and redefining the teaching/learning experience through new distance delivery modalities.

A general survey of the literature on distance education reveals a large body of documents that address from a descriptive or evaluative perspective various “how-to” and best practice factors in the design and implementation of distance learning systems. Underpinning these considerations are critical questions, examined directly or implicit in discussion, concerning the effectiveness with which institutions meet or plan to meet their educational obligations to stakeholders. As distance education courses and programs proliferate across the nation and internationally, and are adopted even by former bastions of “traditional” education, such dramatic change has not escaped the scrutiny of key stakeholders with an interest in educational outcomes (Cyrs, 1997; Simonson, 1997).

Cyrs (1997), in addressing the challenges facing institutions of higher education in this environment of change, notes that “embedded cultures have great difficulty changing” (p. 11), yet he points out how critical it is that institutions adapt to changes in the delivery of higher education in four key areas: quality, access, efficiency, and productivity. With respect to the future of quality assessment, he notes, “There will be less emphasis on evaluating how well a faculty member has taught and more on what students have learned” (p. 11). Simonson underscores the importance of quality assessment during this period of rapid transformation in higher education

As distance education in the United States increases in importance, evaluation will continue to be a critical component of the process of improvement...Distance education programs should be accountable to their goals, should be at least as effective as alternative approaches, and should have a positive impact.
(Simonson 1997, p. 93)

A number of studies have been undertaken that are designed to compare the outcomes of student learning under different instructional modalities. McCollum (1997) reports on a California State University, Northridge study comparing college student achievement on midterm and final examinations in a statistics course taught using two teaching modalities. In this study, one group was taught in a traditional classroom format and the other using a World Wide Web site, electronic mail and electronic chat room. The researchers found that the latter group performed significantly better on both examinations.

Radhakrishnan and Bailey (1997) report on the evaluation of a prototype web-based education system built and tested in an engineering classroom to assess “knowledge transfer”, among other variables studied, of students exposed to that system versus students exposed to a traditional classroom system. Results revealed that use of the web-based system generated significantly greater knowledge transfer, as reflected in an average of 10 more points earned on a 75-point quiz.

Schulman and Sims (1999) assessed the comparative performance of online students and students receiving traditional, in-class instruction in five different undergraduate courses conducted at

Nova Southeastern University. The online and in-class sections of each course were taught by the same instructor. The courses selected for the study represented diverse subjects, including organization behavior, personal finance, managerial accounting, sociological foundations of Education, and Environmental Studies. Subjects included 40 online students and 59 in-class students, each of whom received a pretest and a posttest on subject matter content as part of the study. Results revealed that, while the online students scored significantly higher than the in-class students on the pretest, there was no significant difference in the posttest scores for the two groups (pp. 54-56).

Such findings regarding post-instruction testing are not uncommon. The National Center for Education Statistics report discussed above references several recent studies reporting widespread evidence of similarities in the outcomes of student learning when traditional and distance delivery modalities are compared. In one report cited, *The No Significant Differences Phenomenon*, published by North Carolina State University in 1999, the researcher compiled hundreds of sources that revealed similarities between the learning outcomes of traditional on-campus students and distance education students. The NCES report notes, however, that despite such findings, the evidence of similarity - or no significant differences - is certainly not conclusive and, as this report and others note, there is a considerable amount that remains to be known about the effects and overall value of distance education in enhancing the outcomes of student learning.

Summary

The increasing interest by multiple stakeholders in the quality of higher education has fostered significant concern among accrediting bodies, as well as the institutions they accredit, with demonstrating institutional effectiveness and, in particular, the competencies acquired by students. The increasing proliferation of distance education offerings among institutions of higher education compounds the difficulties that institutions face in measuring their institutional effectiveness, because of the added concern for equivalency between delivery modes in demonstrated performance. Among the emerging challenges for institutions that offer distance education offerings as a complement to their more traditionally delivered offerings is identifying effective mechanisms for demonstrating equivalency. This study explores the question of equivalency, as measured by comparative student performance when a course is offered in two different delivery modes.

DEFINITION OF TERMS

The following operational definitions were applied to this study:

Delivery method: Delivery method is the system by which instruction takes place (e.g., face-to-face, in-classroom instruction; electronically-mediated instruction).

Distance education: Distance education is a mechanism of Instructional delivery that involves a student taking a class in an off-campus location in a traditional class setting or, whether physically on-campus or remote from campus, receiving instruction via electronically-mediated or otherwise technologically-mediated means.

Online delivery: Online delivery is a mechanism of instruction that takes place using the Internet to enable electronic communication between instructor and student.

Student performance: Student performance is operationally defined as the score received on a common mid-term examination.

METHODOLOGY AND PROCEDURES

Data Collection

Population

The population for this study consists of students enrolled in MBA courses offered through the Huizenga School of Business and Entrepreneurship of Nova Southeastern University. The population includes current and future students enrolled in MBA courses.

Sample

The samples drawn from the population were students enrolled in three sections of a specific MBA course, GMP 5015 - The Legal, Ethical, and Social Values of Business, in the Huizenga School of Business and Entrepreneurship during the January-March term 2000 term, which all were taught by the same professor, Dr. Steven Muffler. Specifically, the sample included 20 students enrolled in section GMP 5015STP (a section in which instruction was delivered by traditional, face-to-face instruction in a classroom setting in St. Petersburg, Florida), and 15 students enrolled in two sections in which instruction was delivered online, the latter including 7 students enrolled in section GMP 5015web2, and 8 students enrolled in GMP 5015web3.

The two online sections of the course were treated as one group for purposes of this study, because there appeared to be no differences in the conduct of the delivery between the two sections, and no other differences except the section identifier that was used in online communication between the instructor and the student, and the difference in the scheduling of assignment due dates. All other characteristics of the online instruction and the nature and manner of communication were reported by the instructor as identical.

Variables

The independent variable for this study was the instructional delivery method, of which there were two types: traditional, face-to-face instruction in a classroom setting; and electronically-mediated instruction, with instruction delivered online and discussion transpiring between student and instructor via e-mail and online discussion group. The dependent variable was student performance, as measured by the score on a mid-term examination.

Instrument

The instrument used to measure student performance was a mid-term examination consisting of a combination of standardized and essay items, for which a total of 103 points were available. Specifically, the examination included 30 multiple-choice items (1 point each), 5 matching items (4 points each), 7 short essay items (5 points each), one long essay item (15 points), and 1 bonus item (3 points).

Scoring and Data Presentation

In order to ensure confidentiality, each student was provided with a numeric identifier, the associated names for which were known only to the instructor. There were 21 students originally enrolled in GMP 5015STP, the section in which instruction was delivered by traditional, face-to-face instruction in a classroom setting. One of these students withdrew from the course before taking the mid-term examination. No performance data was generated regarding this student and this section was thereafter treated as a sample of 20 students. These students were assigned numbers 1 to 20. The 7 students assigned to the online section GMP 5015web2 were assigned numbers 30 to 36. The 8 students enrolled in section GMP 5015web3 were assigned numbers 40 to 47.

With regard to generating examination score data, the instructor indicated that he would prefer to report student examination performance as point reductions from the overall total of 103 potential points, rather than as points earned, because this was the manner in which his computerized examination scoring program recorded data. The instructor provided an individualized list of the point reductions on each examination item for each student by group (i.e., as distinguished by the instructional delivery mode). The two online sections, GMP 5015web2 and GMP 5015web3, were treated as one group, as agreed.

Assessment of Reliability for the Instrument

An assessment of the internal consistency reliability of the mid-term examination was conducted using the Kuder-Richardson 21 formula. This rationale equivalence formula is used to determine how each item on a test relates to all other items on a test and to the total test, and it is based on one administration of a test to a group. Reliability coefficients were generated separately for each of the examination administrations, i.e., based on descriptive statistics regarding results derived from the examination administered to the students in the section using traditional instructional delivery and those derived from the examination administration to students in the section using online delivery, with results as follows:

KR-21 formula:
$$r = \frac{(K)(SD)^2 - \bar{X}(K - \bar{X})}{(SD)^2 (K - 1)}$$

$$r_{\text{traditional}} = .65$$

$$r_{\text{online}} = .78$$

These reliability coefficients reflect a moderate level of reliability, indicating a moderate level of error variance. The cause of error variance has not been identified, but may be due to such causes as ambiguity of some examination items, improperly followed examination directions, or the status of the examination takers at the time of the examination administration, among other factors. The moderate level of reliability means that scores from the mid-term administrations may have differed if the examinations had been re-administered to the same students. This imposes a limitation on conclusions reached regarding results and is addressed under the limitation section of this document.

Assessment of Validity for the Instrument

An assessment of the validity of the mid-term examination was obtained. The validation was intended to reveal whether or not the mid-term examination, in fact, measured what it was intended to measure, in this instance, competencies achieved by students during the term of enrollment in GMP 5015, and it was determined through validation that it did.

Data Analysis

Descriptive statistics were generated for student examination scores for each group of students, with the two online sections treated as one, and the face-to-face, off-campus, weekend section constituting the second group. Inferential statistics were then generated to determine whether differences between the groups were statistically significant. These statistics were obtained using the SASS program.

Null Hypothesis

The null hypothesis for this study was: There will be no significant difference in student performance, as measured by scores on a common mid-term examination, between two groups of students enrolled in different sections of MBA course GMP 5015 - The Legal, Ethical, and Social Values of Business, each of which is taught by the same instructor using a different instructional delivery method, but the same syllabus, text, assignments, and examination.

Alternative Hypothesis

The alternative hypothesis for this study was: There will be a significant difference in student performance, as measured by scores on a common mid-term examination, between two groups of students enrolled in different sections of MBA course GMP 5015 - The Legal, Ethical, and Social Values of Business, each of which is taught by the same instructor using a different instructional delivery method, but the same syllabus, text, assignments, and examination.

Significance Level

The significance level for this study was selected in advance by the researcher. The .05 level was selected as it is the most commonly used, no risk involved in accepting this level was identified, and there was no indicated need for establishing a larger or smaller level.

Region of Rejection

The region of rejection for this study was established in advance as .025 at each end.

Statistical Test

The statistical test selected for this study was the analysis of variance (ANOVA). It was assumed that the test scores represented interval data; therefore, a parametric test was applicable.

Assumptions

It was assumed, as indicated above, that the mid-term examination scores represented interval data. In addition, the following assumptions were made by the researcher: that the individual who conducted the validation of the instrument does, in fact, have the expertise to assess the validity of that specific instrument and that his judgement regarding validity was correct; that there were no significant, systematic differences between the two study groups to which study results may be attributed; that there were, in fact, no differences between the two online sections with respect to curricular content or instruction; that there were no significant factors relative to the online students' comfort level with, and competency in, using technology to which differential performance could be attributed; and that there were no significant difference in the expectations of the instructor relative to performance of the two groups that might have impacted his subjective judgement in assessing essay items and assigning scores.

Limitations

The small sample size is assessed as a limiting factor impacting inferences that may be drawn to other groups from results of the study. Additionally, as discussed previously, the reliability coefficients generated for the mid-term examination, using the Kuder-Richardson model, reflect only a moderate level of reliability, thereby imposing limitations on inferences applicable to other groups. Applicability of the results of this study is anticipated to be limited to students in the NSU MBA program. Further, inferences drawn from the data will be applicable only to similar situations in which, for two or more sections of the same course, the instructor, syllabus, text, assignments, and examinations are the same, as was the case in this study.

RESULTS

Descriptive statistics regarding results obtained for the traditionally delivered and online sections are presented below. As reflected, the range of scores was 23 points for each group. The mean scores for the two groups differed by less than two points. Inferential statistics were generated using analysis of variance to determine whether or not the difference in the means for the two groups was statistically significant. The results of the analysis are presented below. Assuming that $\alpha=.05$, the F ratio must be greater than or equal to a value that is between 2.88 ($df_w=30$) and 2.84 ($df_w=40$) to reflect significance. The F ratio generated from analysis of variance was .755, which is not greater than or equal to the value of 2.88.

Descriptive Statistics for Mid-Term Examination for Traditional Section

	N	Minimum	Maximum	Mean	Standard Deviation
Score	20	76.00	99.00	92.7000	5.1309
Valid N	20				

Descriptive Statistics for Mid-Term Examination for Online Section

	N	Minimum	Maximum	Mean	Standard Deviation
Score	15	76.00	99.00	90.9333	6.9124
Valid N	15				

Analysis of Variance for the Two Instructional Groups

	Sum of Squares	df	Mean Square	F	Significance
Between Groups	26.752	1	26.752	.755	.391
Within Groups	1169.133	33	35.428		
Total	1195.886	34			

DISCUSSION

Based on the results of analysis of variance, the null hypothesis established for this study may not be rejected. The results reflect that there is not a significant difference in student performance, as measured by scores on the common mid-term examination, between the two groups of students enrolled in different sections of MBA course GMP 5015, each of which was taught by the same instructor using a different instructional delivery method. This result is consistent with the general literature findings cited previously which reveal similarities, or no significant differences, in the outcomes of student learning when measured by various performance mechanisms. With respect to results of the prior studies conducted by NSU that examined student performance under different instructional modalities, but did not control for the potential effects of different instructors, syllabi, texts, assignments, and examinations on student performance, results of this study underscore the potential impact of such factors in generating differential performance, and that when these factors are held constant, significant differences may not be observed. The small sample size for this study notwithstanding, such findings give credence to educators who contend that the quality of student learning need not be compromised when courses are offered through electronically-mediated instruction or other means of teaching students at a distance.

CONCLUSIONS

It is concluded that for the students enrolled in the MBA course GMP 5015 at Nova Southeastern University during the January-March 2000 term, differences in instructional delivery methods did not effect significant changes in student performance, as measured by scores on the mid-term examination for the course. It is possible that the results of this study may be applicable to future offerings of the same course and/or to additional MBA courses; however, specific inferences drawn from data generated from this study should be limited only to similar situations in which, for two or more sections of the same course, the instructor, syllabus, text, assignments, and examinations are the same, as was the case in this study.

IMPLICATIONS

NSU developed and implemented the electronic classroom in the 1980's, becoming the first institution of higher education to offer online education to graduate students. Since then, entire programs, as well as components of programs, have been offered in an online format. Currently, approximately 55 percent of students enrolled at NSU attend class through the use of some mode of distance education, including, but not limited to: face-to-face contact in a traditional classroom setting at a distant location (the most predominant distance mode); compressed video, audio teleconferencing, and additional electronically-mediated means. NSU is committed to continuing to reach out to students unable or unwilling to attend classes offered through traditional means on-campus. However, the university is equally committed to ensuring equivalency in the educational resources provided to these students and the learning outcomes generated from their educational experiences at the university. Studies such as this one that explore the issue of equivalency in the outcomes of student learning underscore the value of NSU's efforts and reflect the serious purpose with which they are pursued.

This study is anticipated to be useful to faculty and administrators in SBE, as well as to staff involved in institutional research and assessment in the university's Office of University Research and Planning. Study results may be used to inform decisions regarding design, implementation, and evaluation of future distance education configurations, and may assist the university in improving the educational process by maximizing the effectiveness of instructional delivery mechanisms in enhancing student performance. Further, they may assist the university in meeting the institutional effectiveness dictates of both the regional and professional accreditation bodies.

RECOMMENDATIONS

NSU continues to expand its distance education offerings, in particular, those that are offered through electronically-mediated means. In many of these instances, courses are offered dually through traditional, face-to-face contact, as well as electronically. In such instances, the university has a ready laboratory for the study of equivalency in student outcomes, the results of which may be useful to the university in internal decision-making regarding future offerings, as well as in documenting adherence to the criteria established by external accrediting bodies. It is recommended, therefore, that the university build on the results of this study by pursuing additional studies to assess comparative student performance under circumstances in which courses are offered through multiple instructional delivery modes.

REFERENCES

- Cyrs, T. (Ed.) (1997). Teaching and learning at a distance: What it takes to effectively design, deliver, and evaluate programs. San Francisco: Jossey-Bass.
- Debreceeny, R. (1999) Outcomes assessment: The accreditation process [Online]. Available: <http://www.lgc.peachnet.edu/sacs.html> [November 19, 1999].
- Derlin, R., Solis, E., Aragon-Campos, T., & Montoya, N. (1996, February). An academic department's response to outcomes assessment. Las Cruces, NM: New Mexico State University. (ERIC Document Reproduction Service No Ed 400 760)
- Fredda, J.V. (2000a). Comparison of selected student outcomes for Internet- and campus-based instruction at the Farquhar Center for Undergraduate Studies (Report 00-11). Fort Lauderdale, FL: Nova Southeastern University, Research and Planning.
- Fredda, J.V. (2000b). Comparison of selected student outcomes for Internet- and campus-based instruction at the Fischler Graduate School of Education and Human Services (Report 00-16). Fort Lauderdale, FL: Nova Southeastern University, Research and Planning.
- Fredda, J.V. (2000c). Comparison of selected student outcomes for Internet- and campus-based instruction at the Wayne Huizenga Graduate School of Business and Entrepreneurship (Report 00-14). Fort Lauderdale, FL: Nova Southeastern University, Research and Planning.
- Fredda, J.V. (2000d). Comparison of selected student outcomes for Internet versus campus-based instruction (Report 00-08). Fort Lauderdale, FL: Nova Southeastern University, Research and Planning.
- Gaither, G., Nedwek, B. & Neal, J. (1995, June). Measuring up: The promises and pitfalls of performance indicators in higher education. Washington, D.C.; George Washington University. (ERIC Document Reproduction Service No Ed 383 278)
- Marwick, J. D. (1998, July 20). Academic outcomes assessment, a tool for student learning. Urbana- Champaign, IL: University of Illinois. (ERIC Document Reproduction Service No Ed 422 991)
- McCollum, K. A professor divides his class in two to test value of on-line instruction. Chronicle of Higher Education, 43(24), p. A23.
- National Center for Education Statistics. (1999). Distance education at postsecondary education institutions: 1997-98. Washington, D.C.: Author.
- Nova Southeastern University. (1999). Strategic plan 1999-2000. Fort Lauderdale, FL: Author.

Pausch, L. M. & Popp, M. P. (1997). Assessment of information literacy: Lessons from the higher education assessment movement [Online]. Available: <http://www.ala.org/acrl/paperhtm/d30.html> [November 19, 1999].

Radhakrishnan, S. and Bailey, J.E. (1997). Web-based educational media: Issues and empirical test of learning. Toronto, Canada: Web Net 97 World Conference of the WWW, Internet, and Intranet Proceedings. (ERIC Document Reproduction Service No Ed 429 542)

Schulman, A.H. and Sims, R.I. (1999). Learning in an online format versus an in-class format: An experimental study. T.H.E. (Technical Horizons in Education) Journal, 26, 54-56.

Simonson, M. (1997). Evaluating teaching and learning at a distance. New Directions for Teaching and Learning, 71 (Fall).

Southern Association of Colleges and Schools. (1998). Criteria for accreditation. Decatur, GA: Author.

Vinchow, G. (1997, February). Advancing the quality of educational outcomes through assessment: Defining goals [Online]. Available: <http://www.syr.edu/acadaff/assessmt/0297rep.html> [November 19, 1999].



U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)



Reproduction Release

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Effect of Instructional Delivery Method on Student Achievement in a Master's of Business Administration Course at the Wayne Huizenga School of Business and Entrepreneurship

Author(s): Dian R. Moorhouse, M.B.A.

Corporate Source:

Publication Date: January 2001

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, Resources in Education (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign in the indicated space following.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
<p>PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY</p> <p>_____ _____ TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC).</p>	<p>PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY</p> <p>_____ _____ TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC).</p>	<p>PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY</p> <p>_____ _____ TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC).</p>
<p>Level 1</p> <p>↑</p> <p><input checked="" type="checkbox"/></p>	<p>Level 2A</p> <p>↑</p> <p><input type="checkbox"/></p>	<p>Level 2B</p> <p>↑</p> <p><input type="checkbox"/></p>
Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g. electronic) and paper copy.	Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche, or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature:	Printed Name/Position/Title: Dian R. Moorhouse, M.B.A. Director of Planning and Accreditation	
Organization/Address: Nova Southeastern University Research and Planning 3301 College Avenue Fort Lauderdale, FL 33314	Telephone: (954) 262-5390	Fax: (954) 262-3970
	E-mail Address: dian@nova.edu	Date: June 1, 2001

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:

Address:

Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:

Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC Clearinghouse on Assessment and Evaluation
1129 Shriver Laboratory (Bldg 075)
College Park, Maryland 20742

Telephone: 301-405-7449
Toll Free: 800-464-3742
Fax: 301-405-8134
ericae@ericae.net
<http://ericae.net>

EFF-088 (Rev. 9/97)